CLAIMS

1. Use of at least one compound corresponding to the general formula (I) below:

$$R\text{-}(CHOH)_4\text{-}CO_2X \qquad (I)$$

in which:

- R represents a group CH_2OH or CO_2X, and
- X represents a hydrogen atom or a monovalent or divalent cation derived from an alkali metal, from an alkaline-earth metal, from a transition metal or from an organic amine, or an ammonium cation,

in a reducing composition for bleaching or permanently reshaping keratin fibres, for complexing the metal cations present in this composition and/or on the keratin fibres onto which said composition is intended to be applied.

2. Use according to Claim 1, in which the monovalent or divalent cation is chosen from the group consisting of monovalent alkali metal cations, divalent alkaline-earth metal cations, divalent transition metal cations and monovalent cations derived from organic amines or from ammonium.

3. Use according to Claim 1 or Claim 2, in which the compound(s) of formula (I) is(are) chosen from the group consisting of gluconic acid, the alkali metal salts thereof, the alkaline-earth metal salts thereof, the transition metal salts thereof, the organic amine salts thereof and the ammonium salts thereof, and mixtures thereof.

4. Use according to any one of Claims 1 to 3, in which the compound(s) of formula (I) is(are)

chosen from the group consisting of gluconic acid, sodium gluconate, potassium gluconate, anhydrous calcium gluconate, calcium gluconate monohydrate, calcium borogluconate, magnesium gluconate, iron gluconate, manganese gluconate, zinc gluconate and copper gluconate.

5. Use according to Claim 1 or Claim 2, in which the compound(s) of formula (I) is(are) chosen from the group consisting of mucic acid, glucaric acid and mannaric acid, the alkali metal salts thereof, the alkaline-earth metal salts thereof, the transition metal salts thereof, the organic amine salts thereof and the ammonium salts thereof, and mixtures thereof.

6. Use according to any one of the preceding claims, in which the compound(s) of formula (I) is(are) chosen from gluconic acid and mucic acid.

7. Use according to any one of the preceding claims, in which the compound(s) of formula (I) represent(s) from 0.001% to 10% by weight relative to the total weight of the reducing composition.

8. Use according to any one of the preceding claims, in which the compound(s) of formula (I) represent(s) from 0.001% to 5% by weight relative to the total weight of the reducing composition.

9. Use according to any one of the preceding claims, in which the reducing composition comprises one or more reducing agents chosen from the

group consisting of reductones and the salts and esters thereof, sulphites and sulphinates.

10. Use according to any one of Claims 1 to 8, in which the reducing composition comprises one or more reducing agents chosen from the group consisting of thiols, the salts and esters thereof, sulphites and sulphinates.

11. Use according to Claim 10, in which the reducing agent(s) is(are) chosen from the group consisting of thioglycolic acid, thiolactic acid, cysteine and cysteamine, the salts and esters thereof.

12. Use according to any one of Claims 9 to 11, in which the reducing agent(s) represent(s) from 0.1% to 30% by weight relative to the total weight of the reducing composition.

13. Use according to any one of Claims 9 to 12, in which the reducing agent(s) represent(s) from 0.5% to 20% by weight relative to the total weight of the reducing composition.

14. Use according to any one of the preceding claims, in which the reducing composition also comprises one or more cationic or amphoteric conditioning polymers, in proportions of from 0.01% to 10% by weight and preferably from 0.05% to 5% by weight relative to the total weight of said composition.

15. Use according to any one of the preceding claims, in which the reducing composition also comprises one or more nonionic, anionic, cationic or amphoteric amphiphilic polymers, comprising a

hydrophobic chain, in proportions of from 0.05% to 20% by weight and preferably from 0.1% to 10% by weight relative to the total weight of said composition.

16. Use according to any one of the preceding claims, in which the reducing composition also comprises one or more surfactants, in proportions of from 0.01% to 40% by weight and preferably from 0.1% to 30% by weight relative to the total weight of said composition.

17. Use according to any one of the preceding claims, in which the reducing composition also comprises one or more rheology modifiers other than the nonionic, anionic, cationic or amphoteric amphiphilic polymers, comprising a hydrophobic chain, in proportions of from 0.05% to 20% by weight and preferably from 0.1% to 10% by weight relative to the total weight of said composition.

18. Use according to any one of the preceding claims, in which the reducing composition also comprises one or more acidifying or basifying agents, in proportions of from 0.01% to 30% by weight relative to the total weight of said composition.

19. Use according to any one of the preceding claims, in which the reducing composition also comprises one or more solvents chosen from the group consisting of water and mixtures composed of water and of one or more cosmetically acceptable organic solvents, this or these solvent(s) representing from 0.5% to 20% by weight and preferably from 2% to 10% by weight relative to the total weight of said composition.

20. Use according to any one of the preceding claims, in which the reducing composition also comprises one or more adjuvants chosen from the group consisting of mineral or organic fillers, binders, lubricants, antifoams, silicones, dyes, matting agents, preserving agents and fragrances.

21. Use according to any one of the preceding claims, in which the reducing composition is a composition intended for bleaching or permanently reshaping human keratin fibres and preferably the hair.

22. Reducing composition for bleaching or permanently reshaping keratin fibres, comprising at least one reducing agent, characterized in that it also comprises at least one compound corresponding to the general formula (I) below:

$$R\text{-}(CHOH)_4\text{-}CO_2X \qquad (I)$$

in which:

- R represents a group CH_2OH or CO_2X, and
- X represents a hydrogen atom or a monovalent or divalent cation derived from an alkali metal, from an alkaline-earth metal, from a transition metal or from an organic amine, or an ammonium cation,

with the proviso that, when the compound is gluconic acid or a salt thereof, said reducing agent is chosen from cysteamine and the salts and esters thereof, sulphites, sulphinates and reductones, with the exception of ascorbic acid, whereas, when the compound is glucaric acid, said reducing agent is not cysteine or a salt thereof.

23. Composition according to Claim 22, characterized in that the monovalent or divalent cation is chosen from the group consisting of monovalent alkali metal cations, divalent alkaline-earth metal cations, divalent transition metal cations and monovalent cations derived from organic amines or from ammonium.

24. Composition according to Claim 22 or Claim 23, characterized in that the compound(s) of formula (I) is(are) chosen from the group consisting of gluconic acid, the alkali metal salts thereof, the alkaline-earth metal salts thereof, the transition metal salts thereof, the organic amine salts thereof and the ammonium salts thereof, and mixtures thereof.

25. Composition according to any one of Claims 22 to 24, characterized in that the compound(s) of formula (I) is(are) chosen from the group consisting of gluconic acid, sodium gluconate, potassium gluconate, anhydrous calcium gluconate, calcium gluconate monohydrate, calcium borogluconate, magnesium gluconate, iron gluconate, manganese gluconate, zinc gluconate and copper gluconate.

26. Composition according to Claim 22 or Claim 23, characterized in that the compound(s) of formula (I) is(are) chosen from the group consisting of mannonic acid, altronic acid, idonic acid, galactonic acid, talonic acid, gulonic acid and allonic acid, the alkali metal salts thereof, the alkaline-earth metal salts thereof, the transition metal salts thereof, the organic amine salts thereof and the ammonium salts thereof, and mixtures thereof.

27. Composition according to Claim 22 or Claim 23, characterized in that the compound(s) of formula (I) is(are) chosen from the group consisting of glucaric acid, the alkali metal salts thereof, the alkaline-earth metal salts thereof, the transition metal salts thereof, the organic amine salts thereof and the ammonium salts thereof, and mixtures thereof.

28. Composition according to Claim 22 or Claim 23, characterized in that the compound(s) of formula (I) is(are) chosen from mucic acid, mannaric acid, altraric acid, idaric acid, talaric acid, gularic acid and allaric acid, the alkali metal salts thereof, the alkaline-earth metal salts thereof, the transition metal salts thereof, the organic amine salts thereof and the ammonium salts thereof, and mixtures thereof.

29. Composition according to Claim 28, characterized in that the reducing agent(s) is(are) chosen from the group consisting of reductones, thiols and the salts and esters thereof, sulphites and sulphinates.

30. Composition according to Claim 22 or Claim 23, characterized in that the compound(s) of formula (I) is(are) chosen from gluconic acid and mucic acid.

31. Composition according to Claim 30, characterized in that it comprises gluconic acid as complexing agent and/or sodium sulphite and/or sodium hydroxymethane sulphinate as reducing agent(s).

32. Composition according to Claim 30, characterized in that it comprises mucic acid as

complexing agent and ascorbic acid and/or sodium sulphite and/or sodium hydroxymethane sulphinate as reducing agent(s).

33. Composition according to Claim 30, characterized in that it comprises mucic acid as complexing agent and thioglycolic acid and/or cysteine and/or lactic acid as reducing agent(s).

34. Composition according to any one of Claims 22 to 33, characterized in that the compound(s) of formula (I) represent(s) from 0.001% to 10% by weight and preferably from 0.001% to 5% by weight relative to the total weight of said composition.

35. Composition according to any one of Claims 22 to 34, characterized in that the reducing agent(s) represent(s) from 0.1% to 30% by weight and preferably from 0.5% to 20% by weight relative to the total weight of said composition.

36. Composition according to any one of Claims 22 to 35, characterized in that it also comprises one or more constituents chosen from the group consisting of cationic or amphoteric conditioning polymers, nonionic, anionic, cationic or amphoteric amphiphilic polymers, comprising a hydrophobic chain, surfactants, rheology modifiers other than the nonionic, anionic, cationic or amphoteric amphiphilic polymers, comprising a hydrophobic chain, pH modifiers and solvents.

37. Composition according to any one of Claims 22 to 36, characterized in that it also comprises one or more adjuvants chosen from the group

consisting of mineral or organic fillers, binders, lubricants, antifoams, silicones, dyes, matting agents, preserving agents and fragrances.

38. Process for bleaching or permanently reshaping keratin fibres, comprising the steps consisting in:

a) applying to the keratin fibres a reducing composition according to Claims 22 to 37;

b) leaving the reducing composition to stand on the keratin fibres for a time that is sufficient to obtain the desired bleaching or permanent reshaping;

c) rinsing the keratin fibres to remove the oxidizing composition therefrom;

d) washing the keratin fibres one or more times, rinsing them after each wash, and optionally drying them;

said process also comprising, between steps c) and d), in the case of a permanent reshaping, the steps consisting in: i) applying an oxidizing composition to the keratin fibres; ii) leaving the oxidizing composition to stand on the keratin fibres for a time that is sufficient to obtain the desired reshaping; and iii) rinsing the keratin fibres with water to remove the oxidizing composition therefrom.

39. Device or "kit" for bleaching keratin fibres, comprising at least two compositions A and B intended to be mixed together to obtain a ready-to-use reducing composition, characterized in that at least one of the compositions A and B contains one or more reducing agents and at least one of the compositions A and B contains one or more compounds corresponding to the general formula (I) below:

$$R-(CHOH)_4-CO_2X \qquad (I)$$

in which:

- R represents a group CH_2OH or CO_2X, and
- X represents a hydrogen atom or a monovalent or divalent cation derived from an alkali metal, from an alkaline-earth metal, from a transition metal or from an organic amine, or an ammonium cation,

with the proviso that, when the compound is gluconic acid or a salt thereof, said reducing agent is chosen from cysteamine and the salts and esters thereof, sulphites, sulphinates and reductones, with the exception of ascorbic acid, whereas, when the compound is glucaric acid, said reducing agent is not cysteine or a salt thereof.

40. Device or "kit" for permanently reshaping keratin fibres, comprising firstly, either a composition A or at least two compositions A' and B' intended to be mixed together to obtain a ready-to-use reducing composition, either a composition A or at least two compositions A' and B' intended to be mixed together to obtain a ready-to-use reducing composition and, secondly, a ready-to-use oxidizing composition C or at least two compositions D and E intended to be mixed together to obtain a ready-to-use oxidizing composition, characterized in that either composition A or at least one of the compositions A' and B' contains one or more reducing agents and either composition A or at least one of the compositions A' and B' contains at least one or more compounds corresponding to the general formula (I) below:

$$R-(CHOH)_4-CO_2X \qquad (I)$$

in which:

- R represents a group CH_2OH or CO_2X, and
- X represents a hydrogen atom or a monovalent or divalent cation derived from an alkali metal, from an alkaline-earth metal, from a transition metal or from an organic amine, or an ammonium cation,

with the proviso that, when the compound is gluconic acid or a salt thereof, said reducing agent is chosen from cysteamine and the salts and esters thereof, sulphites, sulphinates and reductones, with the exception of ascorbic acid, whereas, when the compound is glucaric acid, said reducing agent is not cysteine or a salt thereof.

41. Use of a composition according to any one of Claims 22 to 37, or of a process according to Claim 38, or of a kit according to Claim 39 or Claim 40, for bleaching or permanently reshaping human keratin fibres and, more especially, the hair.